

SMALL WARS MANUAL
UNITED STATES MARINE CORPS
1940



CHAPTER III
LOGISTICS



RESTRICTED

UNITED STATES
GOVERNMENT PRINTING OFFICE
WASHINGTON : 1940

TABLE OF CONTENTS

The Small Wars Manual, U. S. Marine Corps, 1940, is published in 15 chapters as follows:

CHAPTER I. INTRODUCTION.

II. ORGANIZATION.

III. LOGISTICS.

IV. TRAINING.

V. INITIAL OPERATIONS.

VI. INFANTRY PATROLS.

VII. MOUNTED DETACHMENTS.

VIII. CONVOYS AND CONVOY ESCORTS.

IX. AVIATION.

X. RIVER OPERATIONS.

XI. DISARMAMENT OF POPULATION.

XII. ARMED NATIVE ORGANIZATIONS.

XIII. MILITARY GOVERNMENT.

XIV. SUPERVISION OF ELECTIONS.

XV. WITHDRAWAL.

RESTRICTED

SMALL WARS MANUAL
UNITED STATES MARINE CORPS

CHAPTER III

LOGISTICS

	Par.	Page
SECTION I. INTRODUCTION -----	3-1	1
II. SUPPLY -----	3-2 to 3-17	3-14
III. TRANSPORTATION -----	3-18 to 3-36	15-30

SECTION I

INTRODUCTION

3-1. Logistics is that branch of the military art which embraces the details of transportation and supplies.

“The Tables of Equipment, Supplies, and Tonnage, U. S. Marine Corps,” set forth the equipment and supplies that are prescribed for Marine Corps expeditionary forces to take the field. These tables are a guide to the fourth section of the commander’s executive staff in making a decision as to the type and amount of transportation and supplies required. However, the supply on hand at the port of embarkation, the time allowed for preparations, the ship’s storage space available, the supplies in the theater of operations, the distance from home ports, when replacements can be expected on the foreign shore, and the condition of the roads and the road net within the anticipated field of operations will all be essential and controlling factors in arriving at the final decision.

SECTION II

SUPPLY

	Par.	Page
Influence of supply on a column.....	3-2	3
Supply officers.....	3-3	4
Storage.....	3-4	4
Distribution.....	3-5	5
Supply steps.....	3-6	8
Local purchases.....	3-7	8
Requisitions.....	3-8	8
Depots, dumps, and distributing points.....	3-9	8
Chain of responsibility.....	3-10	9
Accountability.....	3-11	9
Public funds.....	3-12	10
Objective.....	3-13	11
Supervision of requisitions.....	3-14	11
Accumulation of stores.....	3-15	12
General.....	3-16	12
Importance of supply.....	3-17	12

3-2. **Influence of Supply on a column.**—The “big three” of supply are Ammunition, Food, and Water. Combat troops can operate in the field for a very limited time in actual combat with only AMMUNITION, but their continued existence requires the other two, FOOD and WATER. Therefore, in order to conduct the advance inland, one of the first considerations in such a movement must be the means of supply.

Supplies may be obtained as follows:

(1) From the country en route, by requisition or other authorized method.

(2) By continuous resupply via convoys despatched from the base.

(3) By taking sufficient supplies with the column for its maintenance from the base to its destination; resupply to begin after arrival at destination.

(4) By the establishment of fortified advanced bases along the route. These advanced bases are established by detachments from the column initially and supplies built up at them by convoys dispatched from the rear or main supply base; thereafter, the column draws its supplies from these advanced bases direct.

(5) By airplane, either in plane drops or landing of transport planes on favorable terrain at the camp site of the column. (*See Chapter IX, Aviation.*)

SUPPLY

(6) In most small wars operations, a combination of all these methods will be used.

3-3. **Supply officers.**—Officers charged with supply have a dual mission. They must first get the supplies, then supply them to the troops. In order to carry out these duties it is essential that the officer responsible for supply has the following essential information at all times:

- (1) The supplies and equipment required by the force.
- (2) The supplies and equipment the force has on hand.
- (3) Where the required items may be procured, from whom, and when.
- (4) When, where, and in what quantities replacements will be needed.

3-4. **Storage.**—*a.* The matter of storage is very closely connected with the problem of supply and starts at the port of debarkation. Prior to or upon arrival of the expeditionary force at the port of debarkation, a decision must be made as to the location of the main-supply depot. The following factors are of importance in reaching this decision:

- (1) Mission of the intervening force.
- (2) Docking or lighter facilities.
- (3) Availability of suitable shelter for stores.
- (4) Railroads, highways, water routes available for supply purposes and types of carriers.
- (5) Availability of civilian labor.
- (6) Security.
- (7) Location of troops; distance from supply base.
- (8) Location of possible landing fields.

b. It is always desirable to have the supply base near the point of debarkation in order to facilitate unloading and segregation of stores. However, for various reasons, this is not always practicable. It will then be necessary to establish at the debarkation point a forwarding depot, and place the main depot or base at an intermediate point, between the forwarding depot and the area to be supplied. From the main supply depot, the flow of supply would ordinarily be to and through advanced supply bases, and forward to organizations in combat zones. The usual route would be via railroad, where it exists, or highway, using motor transportation to advanced supply bases in organization areas. It will usually be found advantageous to build up small stocks of essential supplies, at these advanced bases, or even farther forward at the advanced distributing points, in order to

SUPPLY

insure a continuous supply. This is especially necessary when operating in a theater that has a rainy season.

c. The available transportation facilities will also be an important consideration in determining the location of distributing points, and the levels at which they are to be kept.

d. Quartermaster department personnel will be kept at the depots. These units will ordinarily be organized to handle the main subdivisions with warrant officers or staff noncommissioned officers of the department as assistants or section chiefs. At these points the enlisted force should be augmented by civilian labor if available.

e. Routine replacements of depot stocks will ordinarily be maintained by timely requisitions submitted by officers in charge to the proper supply depot in the United States or, in the case of articles not normally carried by these depots, by requisitions submitted direct to the Quartermaster, Headquarters Marine Corps.

f. The foregoing replenishment should be augmented by local purchases of items available locally at reasonable prices.

g. It will be necessary to inspect existing local facilities regarding shelter for depot stocks and service units in order that proper recommendations may be made to Force Headquarters relative to preparation of formal agreement for rental. Failing this, it would be proper, in the event a long stay is anticipated, to recommend construction of suitable buildings for this purpose. Ordinarily, in tropical countries, service units may be quartered in tents.

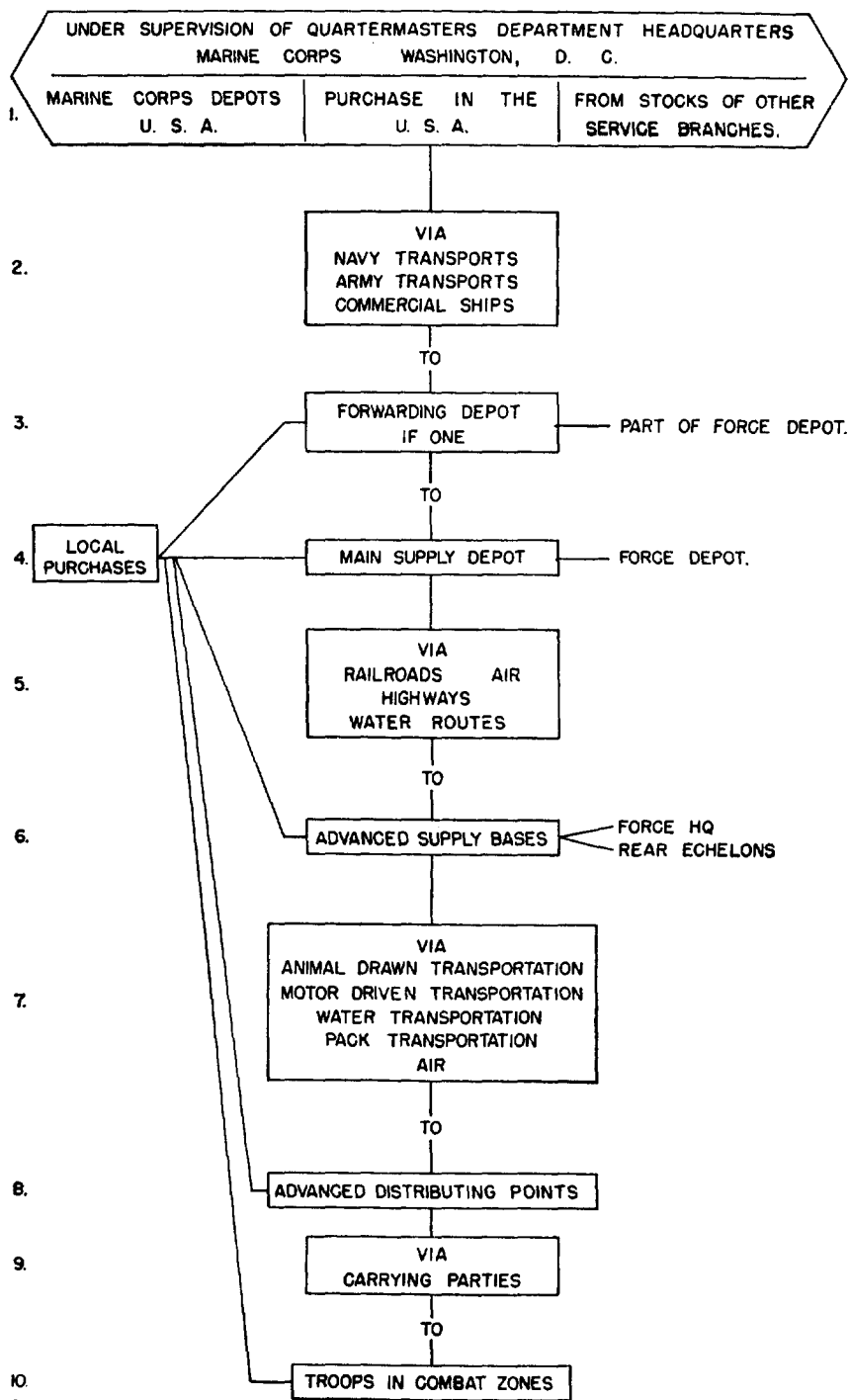
h. The location of transportation units employed in the depot supply plan will usually be controlled by the location of the depot or bases. Such units should be reasonably close to the depots and subject to depot control.

3-5. Distribution.—*a.* Ordinarily, depots with force transportation will supply as far forward as consistent with existing conditions. Organization transportation, whether motor or pack, will carry forward from this point either directly to troops or to positions from which troops may be supplied by carrying parties. Force Headquarters units and rear echelons of all organizations will normally be supplied directly by supply depots or bases.

b. If fortified advanced bases are to be established, the decision relative to their location will be influenced by the suitability of the sites as camps. The type of shelter utilized will depend on the availability of buildings or construction material in the vicinity or the feasibility of transporting shelter material to these sites from the main or intermediate base. In the latter case, the decision will be

SUPPLY

SUPPLY PROCUREMENT AND DISTRIBUTION CHART FOR SMALL WARS MANUAL



SUPPLY

influenced by the amount of transportation available at the time the bases are being established. If local shelter or transportation for such construction material is not available, the vicinity of the advanced bases should at least be cleared and developed as a camp site. An adequate water and fuel supply should be available.

c. The accompanying chart shows how procurement and supply will normally exist in small wars.

d. *Description of chart.*—Step (1)—Procurement here and (2) transportation to depot or forwarding depot is of course continuous, based on requisitions from the expeditionary force. Requisitions are varied, consisting of periodical requirements submitted on usual forms together with letter and, in emergencies, radio, telegraphic, or cable dispatches. Decisions as to quantities for, and places of, storage depend upon the particular situation and mission. In some instances the port of debarkation might be selected as the site of the force depot. If the operation necessitates the presence of the bulk of the force far inland, it is probable that only a forwarding depot or segregation point would be maintained at the port of debarkation, and the main depot established further inland along the line of communications. There can be no set rule regarding this arrangement. From the depot or main base, field distribution begins. Those nearest the main base would probably be supplied through the medium of advanced supply bases at which small stocks would be maintained. If possible, a daily distribution would be made to points beyond. Failing this, a periodical system of distribution would be made, carrying forward to combatant units sufficient supplies and ammunition to meet their needs for stated periods. This would entail the establishment of additional advanced dumps from which troops could be supplied either by means of their own transportation, or in some instances, by pack trains. Carrying parties might be employed at this point.

e. It is doctrine that supplies are echeloned in depth to the rear, and that some system be decided upon that results in a proper distribution forward. In most small wars situations almost every accepted principle of warfare on a large scale is subject to modification due to the irregularity of the operation. It is this characteristic that sets the "small war" in a class by itself. It is obvious then, that a successful supply plan in any small war theater must be ready to meet these irregular conditions. Here, the means offered by the specific local country and used extensively by it, should most certainly be exploited, modified, improved, where necessary, and adopted to the

SUPPLY

use of our forces. This is particularly true of methods of transport. Supply officers of a small war operation should never overlook the fact that it is always possible to learn something from close observance of local facilities and customs. They may need modification and improvement in order to meet our requirements, but basically there will almost always be found something of value that can and should be used.

3-6. Supply steps.—From a study of the chart above, it will be apparent that some of these steps may, in certain situations, be eliminated, such as the Forwarding Depot and carrying parties where step No. 7 supplies directly to step No. 10.

3-7. Local purchases.—*a.* Local purchases may be made at any of the five places shown along the chain of supply, and sent to troops in combat areas.

b. Where local purchases are made by other than a regularly detailed purchasing officer, prior authorization for such practice must be secured from Force Headquarters.

3-8. Requisitions.—*a* Requisitions for replacements of equipment, supplies, ammunition, etc., are submitted to the nearest accountable or supply officer by the officer responsible, usually company commanders, to and through Bn-4's. Sufficient forethought must be employed to permit procurement and distribution by the required time.

b. Close teamwork should exist between the Quartermaster Department and the field commanders. It is essential that the Quartermaster know what supplies can be procured by the field commander, and likewise the field commander should know what supplies can be furnished by the Quartermaster.

3-9. Depots, dumps, and distributing points.—*a.* The Advanced Distributing Points may be at Area Headquarters or merely at a selected site close to combatant troops. In countries where the condition of roads in forward areas will not permit a daily delivery routine, and such occasions will be common, it will be necessary to maintain small stocks of essential supplies at these Advanced Distributing Points. In most systems of supply operating in the field, there exists the necessity for establishing permanent and temporary points of storage and points where distribution takes place. The terms commonly used to designate such points are "depot," "dump," and "distributing point." The word "depot" is used to designate a place where supplies in bulk are stored permanently and from which the first step in field distribution takes place. Such

SUPPLY

a point requires shelter, security, and close proximity to some good means of transporting supplies. This point is usually established by the organization carrying the bulk of replacement supplies.

b. The word "distributing point" signifies a position or site selected for the transfer and distribution of supplies to consuming units. It is most often used in connection with the daily distribution of automatic supplies used by troops at a fairly uniform rate, such as rations, oil, fuel, forage, etc. It simply means a spot or area to which supplies are brought by one means and turned over to another for purpose of interorganizational distribution.

c. Advanced supply bases are in reality subsidiary depots established inland to facilitate the forwarding of supplies to the distributing points.

3-10. Chain of responsibility.—*a.* The usual chain of responsibility of individuals connected with procurement and distribution of equipment and supplies in the field is:

Force Headquarters.....	F-4.
	Force QM.
	Force Depot QM.
Brigades.....	B-4.
Regiments.....	R-4.
Battalions.....	Bn-4.
Companies.....	Company commander.
Platoons or detachments.....	Platoon or detachment commander.

b. In each company is a company supply sergeant, whose duties include the preparation of company requisitions and through whom requests for replacements of any kind emanating from squads, sections, and platoons should be sent to the company commander. When these requisitions are filled, the company supply sergeant is in charge of proper distribution of the new material to the lower units and individuals. This man holds the rank of sergeant and is entrusted with matters of company supply.

c. Company and detachment commanders should exercise close supervision over requisitions and the issuing of supplies. This is particularly true of rations.

3-11. Accountability.—*a.* Ordinarily, accountability, when it exists, extends down to the battalion in field organizations where the battalions are administrative units. From there on down to the individual, responsibility obtains.

b. There is no set rule by which decisions may be reached relative to recommending the discontinuance of all or part of accountability. In any event, such discontinuance will have to be authorized

SUPPLY

by the Quartermaster, Headquarters Marine Corps, and approved by the Major General Commandant.

c. There will be occasions when some modifications of this system will be desirable and necessary, but normally the administrative units of the force will be able to establish and conduct the routine of their rear echelons so as to permit and justify the continuance of accountability and proper records involving responsibility.

d. The absence of accountability promotes carelessness and waste and presents a serious obstacle to intelligent and economical supply. Loose handling in the responsibility for weapons and ammunition makes it easier for these articles to get into unauthorized hands and even into the hands of the opposing force.

e. The exigencies of field conditions are recognized by everyone connected with our service of supply and consideration is always given to such conditions. Headquarters, U. S. Marine Corps, is fully cognizant of hazards engendered by field conditions. Under justifiable circumstances, certificates of adjustment to accountable officers' accounts will be acceptable. The Quartermaster's Department recognizes this fact and acts accordingly but the point is, that in continuing accountability, there must be a certified record of all such unusual occurrences.

f. It may be entirely impossible for an administrative unit to obtain proper receipts for its issues, but a record for such issues can and should be kept in order that requests for replacements within the unit can be intelligently supervised by the unit supply officer. If the entire administrative unit has taken the field actively, such record should be kept by the accountable officer in the last step of the supply chain before it reaches the unit.

3-12. Public funds.—*a.* Public funds for procurement of such material and services as the force may find desirable and economical are usually entrusted, through official channels, to an officer designated as a disbursing assistant quartermaster.

b. These officers, when authorized by competent authority, may advance public funds to officers in outlying stations for certain local purchases. When such purchases are made, standard forms of vouchers are either prepared by the officer making the purchase, or ordinary receipts are taken by him and furnished the disbursing assistant quartermaster concerned. In order that such transaction may have proper basic authentication it has been the usual practice to write into the orders for such officers, when detailed for duty at

SUPPLY

outlying points, a specific designation as agent for the disbursing assistant quartermaster concerned which becomes the authority for advancement of public funds.

c. An officer receiving such designation as agent should, before entering on his new duties, confer with the disbursing assistant quartermaster in order that there will be complete understanding of how the money in the possession of the agent is to be accounted for when expended. If such a procedure is impracticable, the matter should be made the subject of immediate correspondence between these two officers. There exists such a multitude of regulations and decisions governing the expenditure of Government funds that no one should undertake disbursing even to the extent of a very small sum, without first learning the proper method to pursue. Such procedure will avoid explanation and correspondence later, and may be the means of saving the one concerned the necessity of making good from personal funds an amount of public funds spent in error, solely because of lack of sufficient and proper advance information. It is desired to stress this point most emphatically.

3-13. Objective.—The objective is the one common to all military operations, i. e., success in battle. The well trained and supplied fighter needs but proper leadership to win; therefore the task of the supply officer becomes one of considerable importance from the commander's point of view.

3-14. Supervision of requisitions.—*a.* The most important function of a supply officer is the supervision of requisitions. To know what, when, where, and how to get what the command needs, and then get it and distribute it, is perhaps the whole story of supply insofar as it affects the one to be supplied. The remainder consists of proper recording of what has been done; this is known as accountability.

b. The requisition is the starting point of the whole process. If it be wrong, everything else can't help but be wrong also. Never pad a requisition on the assumption that it will be cut down. Sooner or later this will become known and your requisitions will be worthless to the one who reviews them. If your real needs are cut by someone, find out why and, if you can, insist on what you ask for. But be sure you know what you want, and why. On the other hand, a requisition should never be cut without a thorough investigation.

c. Place explanations on the face of requisitions covering items that are exceptional from previous requests.

SUPPLY

3-15. Accumulation of stores.—*a.* There is a delicate balance between overstocking and understocking. Overstocking means forced issues, while understocking means privation and possibly failure.

b. Do not permit the accumulation of slow-moving stores, particularly clothing in extreme sizes. If it fails to move, report its presence and ask for disposition. Someone, elsewhere, may want the very sizes that are in excess of your needs. Arrange to turn over subsistence stores of a staple nature at least once every 90 days. Report your excess quantities to your nearest senior supply officer through official channels.

3-16. General.—*a.* The following general rules may be of assistance to persons responsible for the handling and storing of supplies:

(1) As a rule, provide an air space under all stored articles. It prevents deterioration.

(2) In the absence of buildings for storage, request that necessary security measures be taken to safeguard your stores.

(3) Visit the units that you supply.

(4) Find out how your system works and adjust it where necessary.

(5) Watch your stock of subsistence stores.

(6) Become familiar with the data contained under "Minimum safekeeping period" for subsistence stores under article 14-54, Marine Corps Manual. (Note particularly the remarks in this table.)

(7) Ask for an audience from time to time with your commander. Keep him apprised of the supply situation. Give him your picture, clearly and briefly, and then recommend desirable changes, if any. Above all, make your supply system fit into his plans.

(8) Keep in close touch with your source of supply. Know what is there and how long it will take you to get it.

(9) Get a receipt for everything that leaves your control. If field conditions are such that this is, in part, impracticable, then keep a record of all such transactions, and set down the reasons for not being able to obtain proper receipts.

(10) Keep your own supply records up-to-date and render necessary reports regarding them.

(11) When you need help, ask for it and *state facts*. Camouflage, or any attempt at it in the supply game, is fatal. If your best judgment has failed, admit it. It is a human characteristic and can rarely be cloaked by a garment of excuses.

3-17. Importance of supply.—The importance of the question of supply upon small wars is well set forth in the following extract taken from *Small Wars* by Callwell:

SUPPLY

The fact that small wars are, generally speaking, campaigns rather against nature than against hostile armies has been already referred to. It constitutes one of the most distinctive characteristics of this class of warfare. It effects the course of operations to an extent varying greatly according to circumstances, but so vitally at times as to govern the whole course of the campaign from start to finish. It arises almost entirely out of the difficulties as regards supply which the theaters of small wars generally present. Climate effects the health of troops, absence of communication retards the movement of soldiers, the jungle and the bush embarrass a commander; but if it were not for the difficulty as regards food for man and beast which roadless and inhospitable tracts oppose to the operations of a regular army, good troops well led would make light of such obstacles in their path. It is not the question of pushing forward the man or the horse or the gun, that has to be taken into account so much as that of the provision of the necessities of life for the troops when they have been pushed forward.

SECTION III

TRANSPORTATION

	Par.	Page
General	3-18	15
Railroad transportation.....	3-19	16
Motor transportation.....	3-20	16
Tractor-trailer transportation.....	3-21	16
Transportation pools.....	3-22	17
Aviation transport.....	3-23	17
Water transportation.....	3-24	17
Animal transportation.....	3-25	17
Important points in packing.....	3-26	18
Pack mules.....	3-27	19
Pack horses.....	3-28	19
Pack bulls.....	3-29	19
Phillips pack saddle.....	3-30	20
McClellan saddle.....	3-31	21
Pack equipment.....	3-32	22
Native packers.....	3-33	24
Marines as packers.....	3-34	25
Bull carts.....	3-35	26
Trains with combat columns.....	3-36	30

3-18. **General.**—*a.* The types of transportation used in small wars operations will vary widely, depending upon local conditions such as roads, terrain, and distances to be covered. In some cases the seasons of the year will be a controlling factor.

b. During small wars in the past every possible type of transportation known to mankind has been used, from railroad, aviation, and motor transportation to dogs, elephant, camel, and porter service.

c. It is safe to say that the type of transportation most suitable to any specific country is being utilized there. A study of these local methods, together with the local conditions, will aid the commander in determining the type of transportation to be used by the intervening forces.

d. In countries where small wars usually take place, the roads are generally bad and exist in only a few localities. When there is a season of heavy rain, it is most probable that practically all roads and trails will become impassable for trucks and tractor-trailer transportation. For that reason other means of transportation must be utilized. This may mean that railroads and air transport, where

TRANSPORTATION

they are available, will have to be used for very short hauls. Animal, cart, boat, or porter transportation will have to be used where there are no passable roads, trails, or railroads.

3-19. Railroad transportation.—*a.* Normal principles of loading and transporting troops and supplies will apply as they do in similar movements elsewhere, making use of whatever rail facilities the country has to offer.

b. For the use of railroads for movement inland see chapter 5, paragraph 3, Movement by Rail.

3-20. Motor transportation.—*a.* This type of transportation should be under the direction of officers specially qualified in its uses. It is not always known exactly what road conditions can be found in the field, and the motor transportation officer, knowing the capabilities and limitations of this type of transportation, considering the conditions of the roads, the road net, and the seasons of the year, will have to use ingenuity in carrying out the task assigned to him.

b. Trucks should be of uniform type generally, but sturdy enough to stand heavy usage. The U. S. Marine Corps equipment tables provide for ½- and 2-ton trucks; these seem to be best for our purposes.

c. Motor transport assignment varies according to the situation. Motor transportation is attached to the force by sections, platoons, or companies, as the case may be. In the case of an independent regiment, a section or more of motor transportation is usually attached.

d. Motoreycles, with or without sidecars, are of very little value in small wars. They require good roads and have some value for messenger service.

e. When needed, native-owned transportation can be used to great advantage. Native chauffeurs, mechanics, and laborers are used when practical. Sudden demands made on the native type of transportation will usually exceed the supply, resulting in very high costs for transportation; but this cannot be avoided.

3-21. Tractor-trailer transportation.—*a.* In certain localities it is likely that where the roads stop, there will be trails and terrain that are passable for tractors with trailers, where motortrucks will be unable to go.

b. Tractors may be available in four sizes. The lightest will weigh approximately 2 tons and run on wheels, using "Jumbo" tires, with small wheels in front and large ones in rear. The other three sizes

TRANSPORTATION

will weigh approximately 3 tons, 5 tons, and either 7 or 8 tons. All of these are to be the track-laying types.

3-22. Transportation pools.—*a.* Certain organizations habitually requiring transportation have vehicles along with their operators and supplies attached to them as a part of their organic organization. Other organizations request transportation as it is needed.

b. In some instances it will be more economical to operate a transportation pool. This is done by placing all transportation in the force under the Force Motor Transport Officer, who will assign the different vehicles to the different tasks as they are required.

3-23. Aviation transport.—For transportation of supplies and troops by aircraft, see chapter IX ("Aviation").

3-24. Water transportation.—*a.* In some instances river boats and lighters can be used to transport troops, animals, and supplies from the port of debarkation inland.

b. Where lakes or other inland waterways exist within the theater of operations, a most valuable method of transportation may be open to the force, and every effort should be made to utilize all water-transportation facilities available.

c. Boats for this purpose and outboard motors should be carried if it is expected that they will be needed. (See ch. X, "River Operations.")

3-25. Animal transportation.—*a.* The use of animals for the purpose of transporting supplies has been one of the most generally used methods of transportation in small-wars operations.

b. Without the pack animal, operations far into the interior of a mountainous and unsettled area, devoid of roads, are impracticable if not impossible. However, the use of pack animals is not a simple or always a satisfactory solution of a transportation problem. Crude or improvised pack equipment, unconditioned animals, and the general lack of knowledge in the elementary principles of animal management and pack transportation will tend to make the use of pack transportation difficult, costly, and possibly unsatisfactory.

c. The efficiency with which the pack train is handled has a direct and material effect on the mobility of the column which it accommodates. With an inefficient pack train the hour of starting, the route of march, and the amount of distance covered are noticeably affected. On the other hand, with conditioned animals, good modern equipment, and personnel with a modicum of training in handling packs, the pack train can accommodate itself to the march of the column and not materially hamper its mobility.

TRANSPORTATION

d. If time permits it is highly important to have the animals that are to be used for transporting supplies accustomed to the firing of rifles and automatic weapons, so that they will not be frightened and try to run away if a contact is made. This can be done by firing these weapons while the animals are in a place with which they are familiar and preferably while they are feeding. The firing should be done at some distance first and gradually moved closer as the animals get accustomed to the noise. In a short time the animals will pay no attention to the reports when they find that it does not hurt them. If this is impossible, and an animal carrying important cargo, such as a machine gun or ammunition, is frightened and tries to bolt, the animal should be shot to prevent the loss of these supplies and to prevent them from falling into the hands of the opposing forces.

e. Pack animals must be conditioned before being taken on an extended march or heavy losses of animals will result.

f. The march should begin immediately after the last animal is packed.

3-26. Important points in packing.—*a.* Loads and distances traveled must be adjusted to the condition of the animals. Pack animals must not be overloaded.

b. In packing up, the time interval between placing the loads on the first and the last animal should be reduced to an absolute minimum. This time interval should never exceed 30 minutes.

c. All equipment should be assembled neatly and arranged the night before a march is to begin. Every single item should be checked, otherwise needless delays will result in the morning.

d. All cargoes should be weighed, balanced, and lashed up the night before a march is to begin.

e. A standard system should be established for stowing all pack gear and cargo loads at each halt for the night. This facilitates the checking of equipment after the halt and greatly reduces the number of lost pieces. A satisfactory system is to place the pack saddles on the ground in a row just in rear of the picket line or, if the animals are pastured at night, place them on a line in a space suitable for packing up in the morning. The harness, lash ropes, and all other gear that belong to that particular saddle and its load should be placed on top of each saddle. The loads should be placed in a row parallel to the saddles; each load in rear of the saddle on which it is to be packed. Only by careful planning and by systematic arrangement can delays in packing up be averted.

TRANSPORTATION

3-27. Pack mules.—*a.* The mule is the ideal pack animal for supply trains, pack trains with foot patrols, and pack trains with detachments mounted on mules. The mule has certain advantages over the horse which fit him for this work, namely :

- (1) The mule withstands hot weather better, and is less susceptible to colic and founder than the horse.
- (2) A mule takes better care of himself, in the hands of an incompetent driver, than the horse.
- (3) The foot of the mule is less subject to disorders.
- (4) The mule is invariably a good walker.
- (5) Age and infirmity count less against a mule than a horse.

b. Pack mules are habitually driven and not led. However, pack mules carrying weapons and ammunition will, for purposes of safety, be led in column by having the leader of each mule drive the mule that precedes him. His mule will, in turn, be driven by the man next in rear of it.

3-28. Pack horses.—*a.* Any good riding horse of normal conformation, good disposition, and normal gaits can be used as a pack horse. The pack animals of a detachment mounted on horses should always be horses. This is necessary in order to maintain the mobility of the mounted detachment. Each pack horse is led alongside a ridden horse. On very narrow trails and at any time when it is impossible for two horses to travel abreast, the pack horse is led behind the ridden horse.

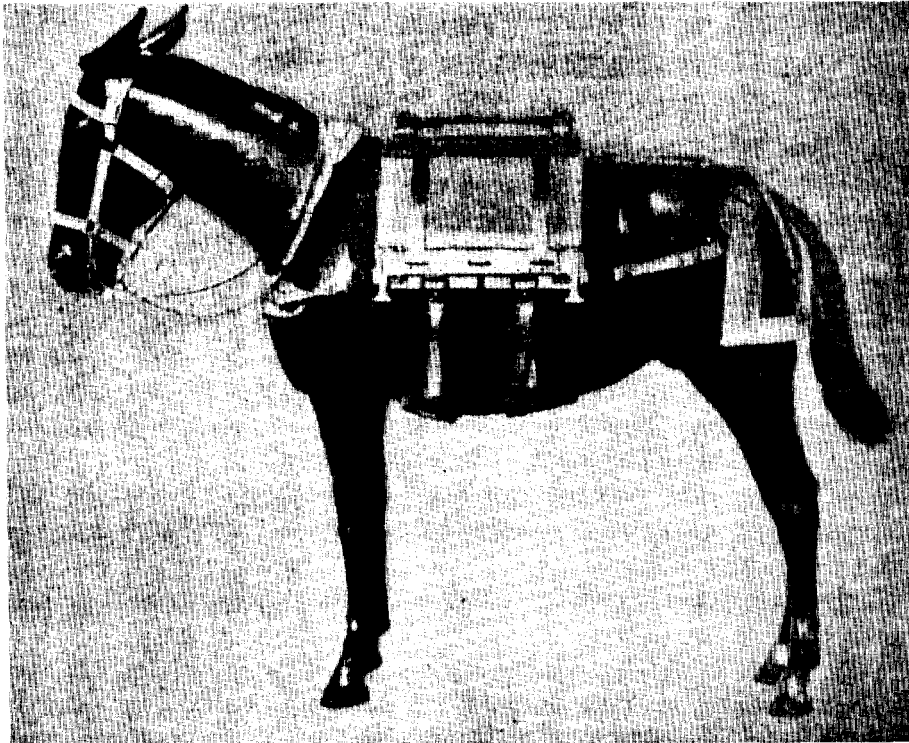
b. Horses properly packed can march at the same gaits as the ridden horse.

3-29. Pack bulls.—*a.* Under certain conditions, bulls can be used to good advantage as pack animals. A pack bull with its wide spreading hoof can negotiate mud in which a mule with its small hoof will bog down. While slower than mules, bulls can carry heavier cargoes than the mules usually found in most small war theaters. Good pack bulls can carry from two hundred (200) to two hundred and fifty (250) pounds of cargo. They can make about fifteen (15) miles a day loaded but, after 5 days march, they will require a rest of from five (5) to seven (7) days if they are to be kept in condition. In employing pack bulls it is advisable to hire native bull keepers to handle them.

b. Mixed pack trains of bulls and horses do not operate smoothly due to their different characteristics.

TRANSPORTATION

3-30. **Phillips pack saddle.**—*a.* The Phillips pack saddle was developed to supply the need for a military pack saddle of simple but scientific design—a saddle that could be handled by newly organized troops with only a short period of training. The characteristics of this saddle make it ideally suited for small wars operations. It is manufactured in one design in four sizes, and all sizes are suitable for either horses or mules.



PHILLIPS PACK SADDLE, PONY SIZE.

Correctly positioned and harness properly adjusted.

(1) *Cargo-artillery type.*—75-mm. pack howitzer units are equipped with this size. It is designed for the large American pack mule.

(2) *Cavalry type.*—A size designated for the average American cavalry horse.

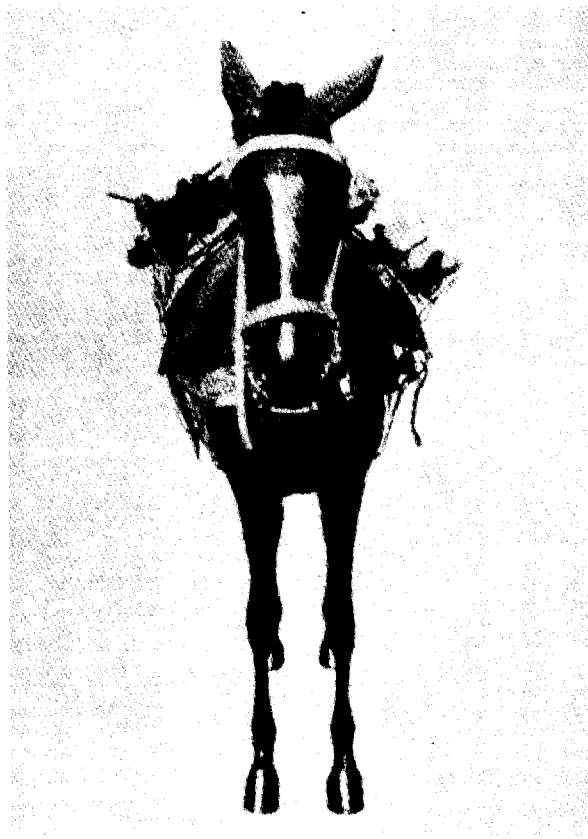
(3) *Pony type.*—A size designed for the Philippine and Chinese pony.

(4) *Caribbean type.*—A size designed for the Central American mules.

b. This saddle is designed for either hanger or lash loads. Hang-

TRANSPORTATION

ers for all standard equipment such as the Browning machine gun, the 37-mm. gun, ammunition in machine-gun boxes, some radio sets, and the pack kitchen can be obtained with these saddles. These hangers consist of attachments which can be quickly and easily attached to the saddle. The loads for which they are designed are simply placed in these hangers and held firmly and rigidly in place



BROWNING MACHINE GUN LOAD ON PHILLIPS PACK SADDLE, PONY SIZE.

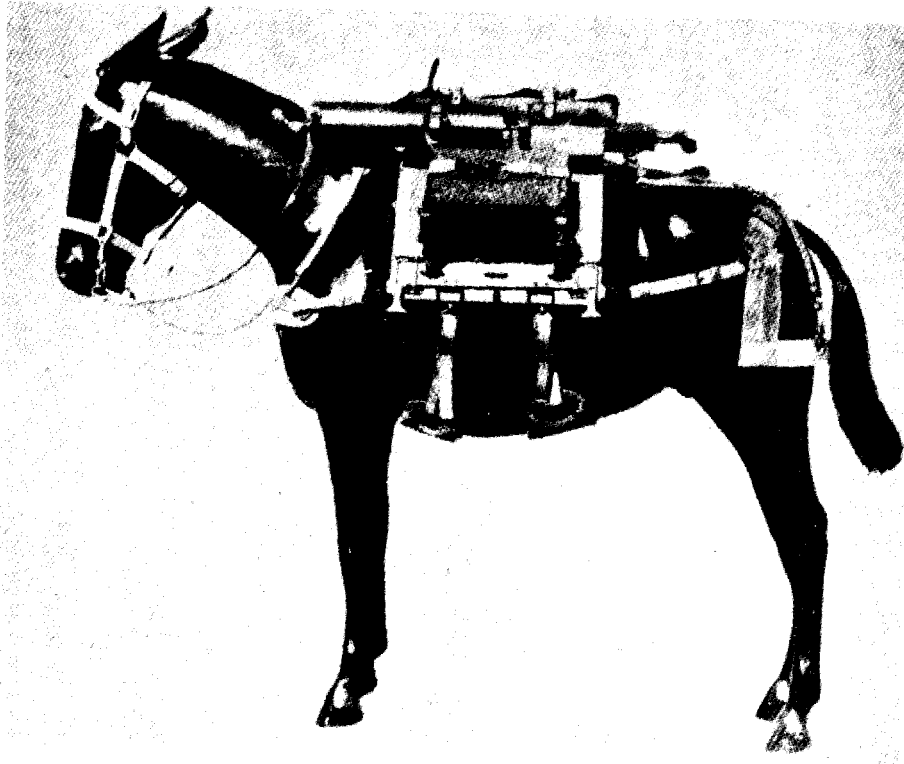
with gooseneck clamps which can be instantly secured or released.

3-31. **McClellan saddle.**—In addition to the regular pack saddles, McClellan saddles may be used in emergency for packing. The tree of a McClellan saddle has most of the characteristics of a pack-saddle tree, and fair results may be obtained by tying the two side loads together across it and running the lashings under the quarter straps or through the cinch strap rings, spider rings (at lower part of

TRANSPORTATION

quarter straps), or the quarter strap D-rings to hold the load down.

3-32. Pack equipment.—*a.* The types of pack equipment in common use by the inhabitants of countries where pack transportation forms a basic part of the transportation system vary in different countries, and sometimes within a country in different areas. This native equipment, though crude, can be converted to military pur-



BROWNING MACHINE GUN LOAD ON PHILLIPS PACK SADDLE, PONY SIZE.

A complete fighting unit of gun, tripod, ammunition, and spare parts roll. Quick release devices on each item of load.

poses and, when no other equipment is available, must be used. Such native equipment invariably has one or more of the following defects:

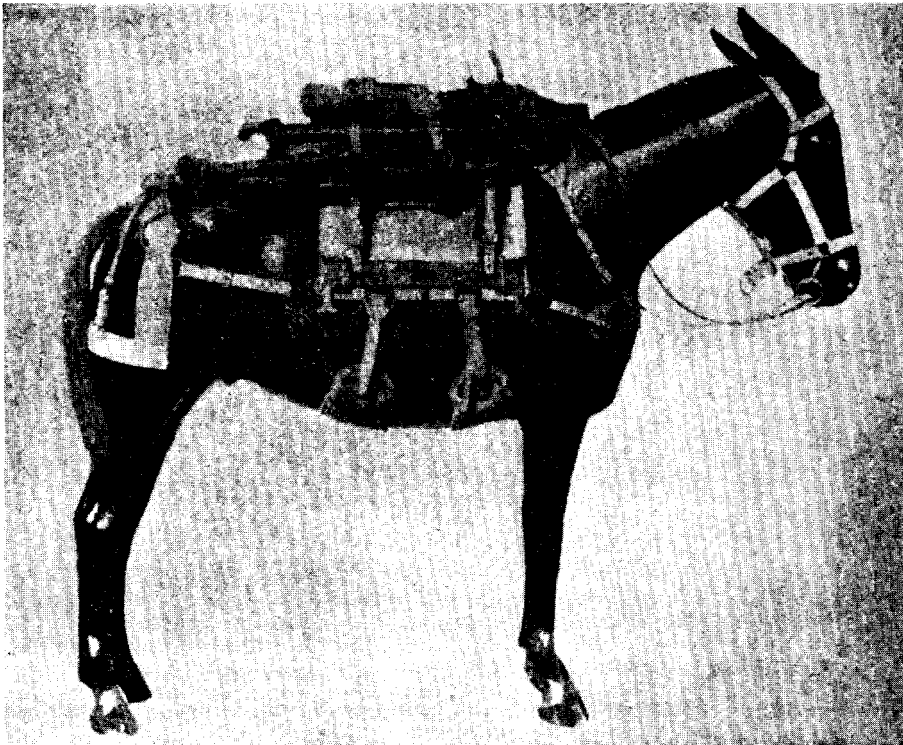
- (1) Highly skilled specialists are required to use it satisfactorily.
- (2) Due to its crude construction it is very injurious to animals.
- (3) It cannot be adjusted easily on the trails.
- (4) Many military loads are extremely difficult to pack on this equipment.

TRANSPORTATION

- (5) The pads, cinches, and other attachments wear out rapidly under constant usage.
- (6) Packing and unpacking require a comparatively great length of time.

b. The advantages of Native Equipment are:

- (1) Generally available in quantities in or near the zone of operation.
- (2) Relatively cheap.
- (3) Light in weight.



BROWNING MACHINE GUN LOAD.

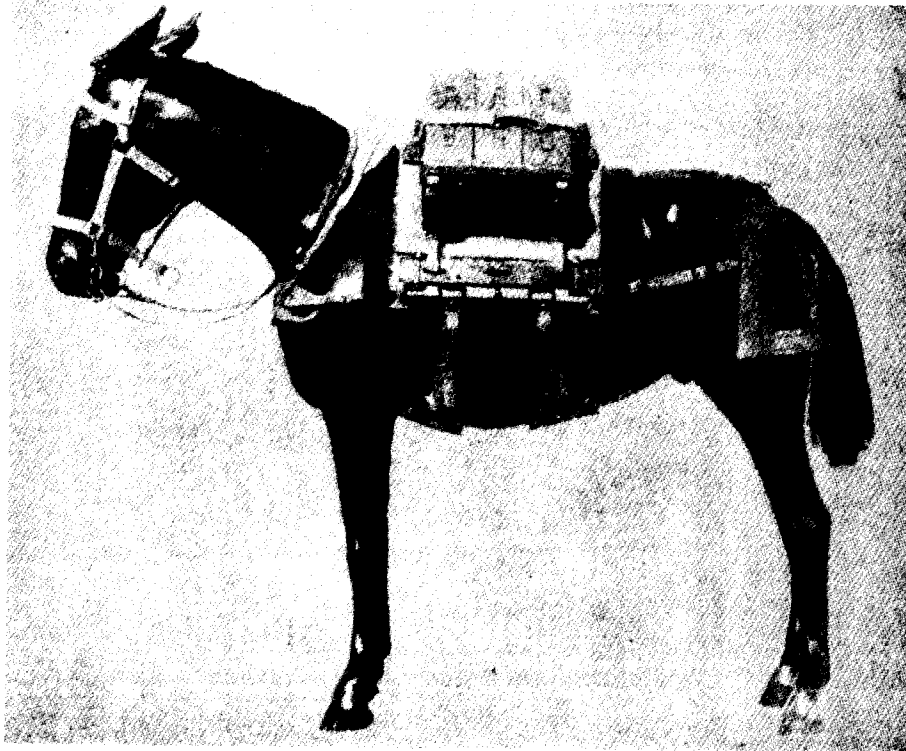
Tripod side.

c. These advantages are the only reasons which might justify the use of native pack equipment in preference to the Phillips pack equipment. However, the cheapness of native equipment is overbalanced by the high percentage of animals incapacitated by its use; its light weight is not necessarily an advantage as an equal or greater pay load can be carried on heavier modern equipment with considerably less damage to the animal.

TRANSPORTATION

d. The aparejo, or primitive pack saddle, has many shapes, being made of leather with sometimes a wooden tree or back pieces to stiffen it and padding placed either in the leather skirts or between the leather and the animal's back, or both. This type is rather hard to pack, as it requires a complicated hitch around the load and saddle.

e. Another form in general use by civilians is the sawbuck type.



MACHINE GUN AMMUNITION LOAD ON PHILLIPS PACK SADDLE, PONY SIZE.

Seven hundred and fifty rounds on each side with space on top of saddle for additional equipment.

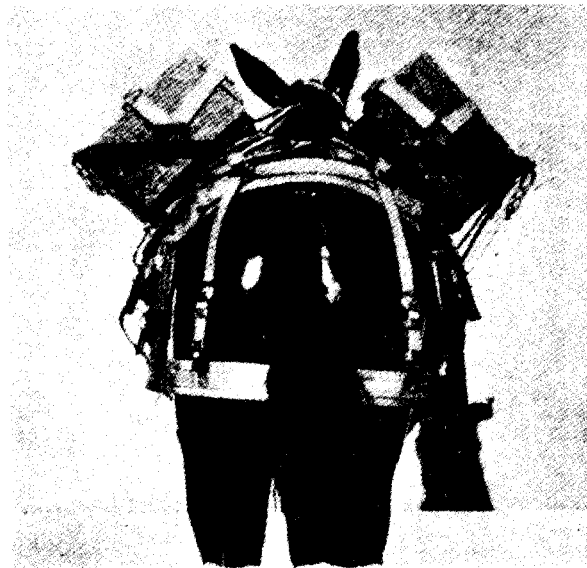
It consists of a wooden tree formed of two bars fitting the saddle place (bearing surfaces) and four straight wooden pieces which form two crosses, one at the pommel and one at the cantle, fastened to these bars. This type may be used with flat straw pads or blankets or both. It has the advantage of absolute rigidity in the frame or tree, requires little skill to construct of materials easily available, and less skill to pack than the aparejo described above.

3-33. **Native packers.**—Native packers have been used to good advantage. Two natives experienced in packing are generally hired

TRANSPORTATION

for every 10 animals, since two men are required to pack each animal and hence work in pairs. A good system is to hire a competent chief packer and allow him to hire the necessary number of packers. With such an arrangement, all orders and instructions should be issued through the chief packer and he should be held responsible for the handling of the cargoes of the animals.

3-34. Marines as packers.—*a.* The average marine can be trained in a fairly short time to pack mules more securely and more rapidly than the average native mule driver, and in regions where pack transportation is used, every marine should be taught to pack. The use of marines as packers has the effect of decreasing to some extent the combat strength of the column, but it has many advantages.



MACHINE GUN AMMUNITION LOAD.

Showing space on top of saddle for additional equipment.

b. In some cases it may be undesirable or impracticable to include native packers in a combat patrol. The hiring of native packers always gives the populace warning that the column is about to move out.

c. The train is more efficiently handled by marines, thus obviating the necessity of issuing orders to the train in a foreign language. Ammunition and weapon loads should always be led by marines, rather than herded or turned over to natives. The adoption of the Phillips pack saddle, coupled with the ease and rapidity with which

TRANSPORTATION

marines can be taught to use it, will warrant a greater use of marines as packers in future operations.

3-35. **Bulldarts.**—*a.* In some localities the bull-drawn cart is the principal means of transporting bulky articles, and when large quantities of supplies are required, the bulldart may be the best means of transportation available. It is a suitable means of transport when



THE NEW CAVALRY PACK COOKING OUTFIT ON THE PHILLIPS SADDLE.

This outfit is made up of many standard utensils nested to form two side loads. Each troop of cavalry is to have one pack cooking outfit.

motortrucks or tractors are impracticable and when the time element does not require supply by the faster methods. Supplies shipped in bulldarts will ordinarily arrive in good condition, if properly loaded and protected. Weapons and munitions so transported should be constantly under special guard.

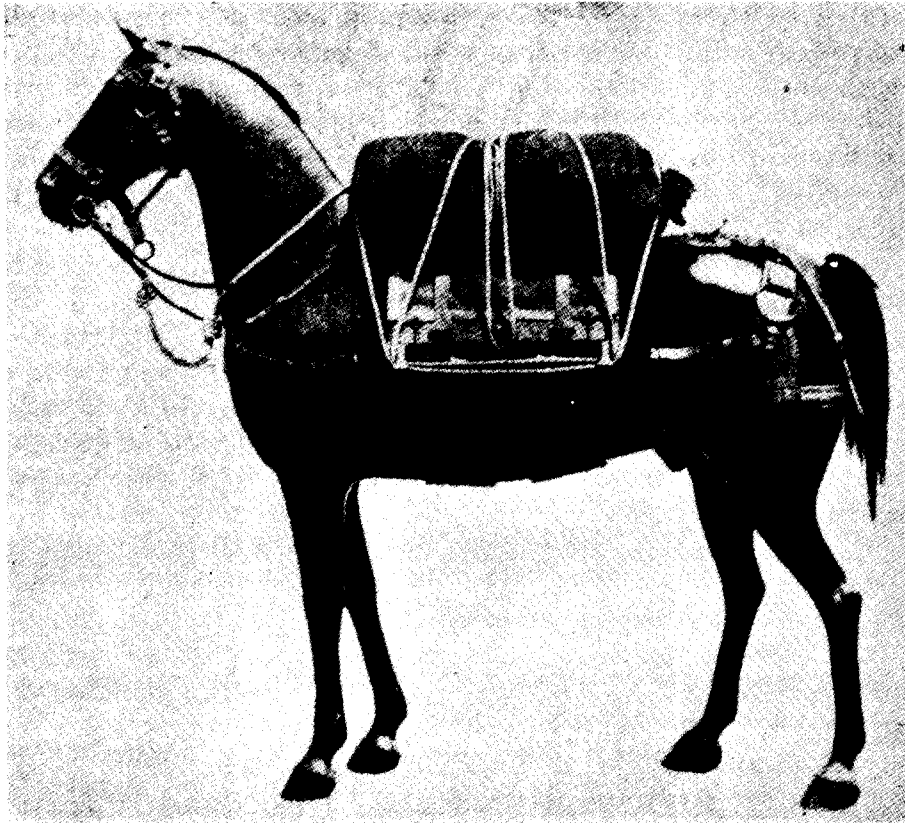
b. If it can possibly be avoided, bulls should not be purchased for Government ownership. Private ownership is more feasible and less

TRANSPORTATION

expensive. Furthermore, it is unlikely that good animals can be purchased at a reasonable price; natives are willing to part with their aged and disabled animals, but rarely sell their good ones.

c. Whenever possible, a chief bulcart driver should be secured or appointed. He should be a man in whom the other native drivers have confidence, and through whom general instructions can be issued.

d. A definite contract should be drawn up with the native owners



DIAMOND HITCH LOAD ON THE PHILLIPS PACK SADDLE.

The usual lash cinch is not required on this saddle.

before the movement begins. All details of pay, rationing of native drivers and animals, breakage, and damage should be clearly set forth; it is necessary to be assured that the native contractors thoroughly understand the terms of the contract. Contracts should be made on the basis of weight or bulk delivered at the destination, and the natives should not be paid until the service is completed. Deductions can be made for losses or damage to supplies en route. In some cases

TRANSPORTATION

it may be necessary to advance small sums for the feeding of the animals en route.

e. Much that is associated with the handling of bullcarts must be learned from experience. The following information, if followed by the inexperienced bullcart commander, will greatly lessen his difficulties:

(1) The bullcart is a simple outfit, but it requires an experienced bullwhacker to guide and man it.

(2) Two thousand pounds is a maximum load for a cart drawn by two yoke of bulls. If the going is bad, from one thousand (1,000) to one thousand six hundred (1,600) pounds is a sufficient load. A load of over two thousand (2,000) pounds is dangerous, regardless of road conditions or number of bulls per cart, as it is too great a strain on the cart and will cause break-downs which are almost impossible to repair on the trail.

(3) When such break-downs occur, new carts should be secured in the immediate vicinity of the break-down, or the load of the broken cart should be distributed among the remaining carts. If neither of these makeshifts is possible, sufficient of the least valuable cargo should be discarded and the loads of carts rearranged to carry all important or valuable cargo. This rearrangement of loads should be made by the chief bullcart driver under the supervision of the escort commander, if there is one.

(4) It is difficult to tell whether one pair of bulls is stronger or weaker than another. Some carts will have to be loaded lighter than others, and only an expert will be able to decide this.

(5) It is better to arrive safely with all carts, cargo, and bulls in good condition than to gamble on overloads with their resultant delays, broken cargo, and injured bulls.

(6) The weight of all military ammunition and supplies can be estimated, and ration containers are usually accurately marked with the gross weight. Thus proper loads can be assigned to all carts.

(7) When streams are to be crossed, carts should be loaded so that the top layer contains perishable cargo, such as sacked flour and sugar, thus preventing or lessening losses by wetting.

(8) In loading carts the native cart driver should be permitted to distribute and lash his load as he sees fit, insofar as is practicable. However, the driver should not be permitted to say when he has a sufficiently large load or he will start off with as light a load as possible. He should be given his share of the cargo and such assistance as he needs in loading it. He will balance his load with a slight

TRANSPORTATION

excess weight to the front to prevent the tongue from riding upwards when under way. He will test the loading by lifting the tongue before the bulls are hitched to it, to estimate the strain on the bulls when they are attached to the cart.

(9) On the first day's march, the best cart drivers should be noted. This can be done by personal observation and careful spotting of the carts that are slow, and those that cause most delays. On the morning of the second day, or sooner if it can be done without undue delay or confusion, poor carts should be placed at the head of the train, leaving the best carts in the rear. This will assist in keeping the column closed up, thus making supervision, protection, and control of the train much less difficult. When the train consists of so many carts that a mental list of the drivers is difficult, the carts should be numbered with painted numerals before departure, and a written list made of each cart by number, driver, and owner.

(10) By having a few officers or noncommissioned officers mounted, much time can be saved in checking up and clearing delays on the trail. If all trouble has to be cleared on foot, needless delays will result.

(11) Train guards must keep a careful watch on cargo to prevent drivers from breaking containers and consuming unauthorized rations en route and in camp. In camp, carts should be arranged in a park convenient for guarding and for the next day's departure.

(12) Extra bulls should be provided for a train, especially in hot weather, to facilitate getting carts out of difficulties, advancing carts up steep grades, and replacing casualties among the bulls.

(13) Any interference on the part of marines with the function of the native drivers, other than that absolutely necessary, will probably work out disadvantageously.

(14) Cargoes, especially those of rations and ammunition, should have a protective covering—such as ponchos or canvas.

(15) During hot weather, bulls cannot be worked in the heat of the day. A good schedule to follow at such times is to start the day at about 3 a. m., and travel until about 9 a. m., then give the bulls a rest until 3 p. m., when travel can be continued again until 9 p. m. In this way the carts can cover from 15 to 20 miles per day, depending upon the conditions of the roads.

(16) A marine officer in charge of a train should cooperate to the fullest extent with the native chief of the bull-cart train in allowing him to set his own schedule. The trip can be materially speeded if this is possible, and the schedule of the marines made to conform to that of the bull-cart train.

TRANSPORTATION

(17) In traveling through barren country, it may be necessary to carry food for the animals and, if this is the case, the pay load must be lessened in proportion. As soon as responsible natives can be found and when the route along which the supplies have to be transported is safe, it is wise to allow the train to proceed without escort. The natives, if held strictly responsible for losses, will probably not proceed if there is danger that the train will be captured, as they will have been warned of this danger before the marines. Escorting supplies by such a slow method is very tedious and costly in men. However, ammunition and weapons must be escorted.

3-36. Trains with combat columns.—*a.* Pack trains which carry the supplies, baggage, ammunition, and weapons of combat columns should be made as mobile as possible. Both the number of animals and the cargo loads should be as small as is consistent with the absolute needs of the column. If there is a choice, it is better to increase the number of animals than to increase the individual cargo loads.

b. In general, the pack loads accompanying a combat column should not exceed twenty-five percent (25%) of the weight of the pack animal which, for small mules and horses, would mean a maximum pay load of about one hundred and thirty (130) pounds. One hundred pounds is considered an average load. This is a general rule and the load must be varied to meet the condition of trails and the condition of the individual animal. Some combat loads will exceed this percentage, and it will be necessary to select the strongest and best conditioned animals to carry these special loads.

